INTRODUCTION AND SUMMARY

This report responds to the Commission's Public Notice in CC Docket No. 96-98, which seeks additional information on how to define the special access market, and on the ability of competing carriers to provide special access service without access to incumbent LECs' networks.*

First, this report demonstrates that the market for special access service is distinct from the market for basic local exchange services from both a demand and supply perspective. On the demand side, the vast majority of special access revenue is generated by customers using DS-1 circuits or above, and the largest purchasers are interexchange carriers. On the supply side, CLECs and interexchange carriers are more significant providers of special access service than basic local exchange services. Moreover, special access service uses dedicated facilities that are different to provision, operate, and maintain from the shared facilities used for basic local exchange service, and that accordingly are priced very differently.

Second, this report demonstrates that competition for special access service is widespread and growing rapidly. It has been more than a year since the Commission received comprehensive data regarding special access competition, and since that time the number of carriers reporting to the Commission that they provide competitive access service has grown from 109 to 349. CLECs' share of the entire special access/private line market has grown from 33 percent to 36 percent. Competing carriers have obtained one or more fiber-based collocation arrangements in wire centers that cover at least 30 percent of the incumbent LECs' special access revenues in 60 percent of the MSAs in the country.

Third, this report demonstrates that the availability of competitive alternatives to the high-capacity loops and interoffice transport that ILECs provide also is widespread and has continued to grow rapidly. In the past two years since the Commission examined such data, there has been a dramatic increase in local fiber supplied by "carrier-agnostic" wholesale suppliers. Five of these alternative fiber suppliers recently formed an industry coalition, which claims that its "members together represent a total capital investment of approximately $1 billion." For a growing number of CLECs, the fiber provided by these wholesale suppliers satisfies a large part of their demand for last-mile local connectivity and interoffice transport. Moreover, CLECs have continued to expand their own local fiber networks rapidly. In the past two years, the number of route miles of fiber that CLECs have deployed has grown from approximately 160,000 to more than 218,000. The number of CLEC fiber networks in the 150 largest MSAs – which contain nearly 70 percent of the U.S. population and 80 percent of all special access revenues –has grown from 486 to 635. Furthermore, several of the nation's largest operators of long-haul fiber networks have recently constructed local fiber networks and have begun leasing dark fiber on these networks to CLECs. Finally, CLECs continue to expand their use of fixed wireless connections to reach end-user customers.

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* This report was prepared by Evan T. Leo of Kellogg, Huber, Hansen, Todd & Evans, PLLC. It updates and builds on an earlier report prepared by Peter W. Huber and Evan T. Leo that was submitted in this proceeding: P. Huber and E. Leo, *Special Access Fact Report*, Submitted by the United States Telecom Association, Prepared for Bell Atlantic, BellSouth, GTE, SBC, and U S WEST, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98 (FCC filed Jan. 19, 2000).

I. SPECIAL ACCESS.

A. Market Definition.

Special access service is distinct from basic local exchange service from both a demand and supply perspective.

First, the end users of special access service are different from those of basic local exchange service. As the Commission has found, the customers for special access "are IXCs and large businesses, not residential or small business end users."[1] In fact, between 78 and 89 percent of the special access revenue earned by BellSouth, Qwest, SBC, and Verizon is generated from DS-1 circuits or above (*e.g.*, DS-3, OC-3). *See* Table 1.[2] And as the Commission has recognized, DS-1 circuits "are primarily used by business customers."[3]

Table 1. Percentage of Special Access Revenues* Generated from DS-1 Circuits or Above

BellSouth	87%
Qwest	89%
SBC**	78%
Verizon	81%

*Includes both intrastate and interstate revenues. **Does not include SNET and Nevada Bell.
Source: Internal company data

The largest purchasers of special access service are interexchange carriers, which use special access to transport large volumes of traffic to and from their largest business customers.[4]

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[1] *Access Charge Reform; Price Cap Performance Review for Local Exchange Carriers; Interexchange Carrier Purchases of Switched Access Services Offered by Competitive Local Carriers; Petition of U S WEST Communications, Inc. for Forbearance from Regulation as a Dominant Carrier in the Phoenix, Arizona MSA*, Fifth Report and Order and Further Notice of Proposed Rulemaking, 14 FCC Rcd 14221, ¶ 142 (1999) ("*Pricing Flexibility Order*"); *see also WorldCom v. FCC*, 238 F.3d. 449, 453 (D.C. Cir. 2001) ("Most users of special access services are companies with high call volumes."); Corrected Brief for Federal Communications Commission at 4, *WorldCom v. FCC*, No. 99-1395, et al. (D.C. Cir. filed Sept. 12, 2000) ("Because special access services employ dedicated facilities, special access is typically used by IXCs and large businesses with high traffic volumes."); Brief of MCI WorldCom, Petitioners and Supporting Intervenors, *WorldCom v. FCC*, No. 99-1395, et al. (D.C. Cir. filed Sept. 8, 2000) ("Special access, used generally by business customers who have a high volume of calls, is accomplished 'via a private, dedicated line...running from the customer to the IXC'...By contrast, switched access connections are generally used by residential customers and other customers with lower traffic volumes.").

[2] References to Verizon include GTE; references to Verizon East refer to the former Bell Atlantic states; references to SBC include Ameritech; references to Qwest include U S WEST.

[3] *See, e.g.*, *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Second Report ¶ 99, CC Docket No. 98-146, FCC 00-290 (rel. Aug. 21, 2000).

[4] As the CLECs' own economist describes it: "Beginning in the late 1980s, the competitive access providers . . . began to construct fiber ring facilities in the central business districts . . . of many urban areas in order to supply the IXCs and their customers with alternatives to ILEC provided special access services. Large IXCs have vertically integrated into the special access business in order to provide dedicated circuits to their largest customers in certain parts of the country." Daniel Kelley, HAI Consulting, Inc., *Deregulation of Special Access Services: Timing Is Everything*, at 7-8 (June 25, 1999), *attached to ex parte* filing of the Association of Local Telecommunications Services, CC Docket No. 99-24 (FCC filed July 1, 1999).

Between 56 and 76 percent of the special access revenue earned by BellSouth, Qwest, SBC, and Verizon is generated by interexchange carriers. *See* Table 2. The FCC has noted that long distance carriers "typically provide resold special access and private line services as part of toll service operations."[5]

Table 2. Percentage of Special Access Revenues* Generated from Interexchange Carriers	
BellSouth	72%
Qwest	76%
SBC	56%
Verizon	67%
*Includes both intrastate and interstate revenues. *Source: Internal company data*	

Special access customers also are highly concentrated. For example, more than 80 percent of SBC's special access revenues are generated in less than 25 percent of the wire centers in which it is providing special access. In Verizon's region, more than 80 percent of special access revenues are generated from about 20 percent of Verizon's total wire centers. In Qwest's region, more than 60 percent of special access revenues are generated from 11 percent of Qwest's total wire centers. In BellSouth's region, 91 percent of special access revenues are generated from 20 percent of BellSouth's total wire centers.

Second, the suppliers of special access service are different from the suppliers of basic local exchange service. The big three interexchange carriers are not only the largest purchasers of special access service from incumbent LECs, but also major self-suppliers of special access. AT&T and WorldCom, for example, each has local facilities in nearly 200 markets that are used to provide special access services.[6] Sprint recently stated that it is deploying local fiber rings in "20 major U.S. markets" that allow "improved access economics, and enable Sprint "to significantly reduce its special access costs."[7] As described in more detail below, other long distance providers – including Williams, Level 3, and Global Crossing – likewise have extensive local facilities that they use to self-provide special access services.[8]

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[5] FCC, *Local Telephone Competition at the New Millennium* at Table 6 note **** (Aug. 2000).

[6] *See* New Paradigm Resources Group, Inc., *CLEC Report 2001*, Ch. 9 – WorldCom at 13, 18 & AT&T at 19, 27 (13th ed. 2001) ("*CLEC Report 2001*").

[7] *Sprint Announces Financial Targets and Growth Strategies*, PR Newswire (Nov. 3, 2000).

[8] *See, e.g.*, C. Grice, *Williams to Expand High-Speed Network into 50 Cities*, News.com (Feb. 10, 2000), http://news.cnet.com/news/0-1004-200-1546995.html?tag=st (Williams "expects to spend $421 million over three years in order to link its proposed 33,000-mile fiber-optic 'backbone' network directly to business customers in the nation's largest cities."); Level 3 Communications, *Building the Network*, http://www.level3.com/us/info/network networkmap ("When completed, the Level 3 Network will include local networks in 56 U.S. cities," and this network will "be connected to an approximately 16,000 mile U.S. intercity network."); Global Crossing Press Release, *Global Crossing Reports 2000 Pro Forma Cash Revenue up 36%, Recurring Adjusted EBITDA up 54% from 1999* (Feb. 14, 2001) (in 2000, Global Crossing completed metro rings in 10 cities in the United States: New York, Philadelphia, Washington D.C., Atlanta, Miami, Dallas, Chicago, San Francisco, San Jose, and Los Angeles).

Apart from the major interexchange carriers, CLECs as a group are more significant suppliers of special access service than basic local exchange service. As the Commission has recently found, "the revenues of competitive LECs come primarily from special access and local private line services."[9] CLECs now account for 36 percent of all special access revenue, which is indeed significantly larger than their share of the local exchange market as a whole.[10]

Third, special access service is provisioned and operated differently from basic local exchange service. As the Commission has noted, special access is provided over "dedicated facilities that run directly between the end user and the IXC's point of presence (POP), or between a LEC's switch and an IXC's POP."[11] In contrast, ordinary local exchange services "use local exchange switches to route originating and terminating interstate toll calls."[12] As demonstrated above, the vast majority of dedicated facilities used for special access are high-capacity circuits. *See* Table 1. In contrast, the vast majority of switched access lines are standard voice-grade circuits (*i.e.*, analog two-wire loops).[13]

Finally, as suggested by the difference in how facilities are used for special access services as compared to basic local exchange services, the prices of these services differ as well.[14] The price of a special access circuit – including one channel termination, a fixed and variable mileage charge, and multiplexing – typically begins at around $500 per month.[15] By contrast, the typical local business line in urban areas costs $44 to $71 per month and relies on switched access service that is priced at between 2 and 3 cents per minute.[16]

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[9] *Promotion of Competitive Networks in Local Telecommunications Markets*, First Report and Order and Further Notice of Proposed Rulemaking in WT Docket No. 99-217, Fifth Report and Order and Memorandum Opinion and Order in CC Docket No. 96-98, and Fourth Report and Order and Memorandum Opinion and Order in CC Docket No. 88-57, WT Docket No. 99-217; CC Docket No. 96-98; CC Docket No. 88-57, FCC 00-366, ¶ 24 (rel. Oct. 25, 2000).

[10] According to FCC figures, CLECs control about 36 percent of special access revenues compared to about 8 percent of local exchange revenues as a whole. *See* FCC, *Telecommunications Industry Revenue 1998* at Table 7 (Sept. 1999); FCC, *Telecommunications Industry Revenue 1999* at Tables 5 & 6 (Sept. 2000) (CLECs' share of 8 percent of local service revenues was derived by applying CLEC- and industry-wide growth rates to 1999 data in order to estimate 2000 data).

[11] *Access Charge Reform*, Sixth Report and Order, 15 FCC Rcd 12962, ¶ 130 (2000).

[12] *Id.*

[13] *See, e.g.*, FCC, *Statistics of Communications Common Carriers* at Table 2.4 (Aug. 2000) (as of December 31, 1999, over 85 percent of business access lines were single- or multi-line analog lines).

[14] *See, e.g.*, *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Second Report, 12 FCC Rcd 11,266, 11,324 & n.258 (1997) ("A key aspect of our analysis of the extent to which wireless services are being used as a substitute for wireline services is to look at the prices for both types of services.").

[15] For example, a DS-1 circuit under Qwest's federal special access tariff starts at $447.25 plus $12.90 per mile. A DS-1 circuit under SBC's federal special access tariff starts at $415 plus $13.78 per mile.

[16] *See* FCC, *Reference Book of Rates, Price Indices and Expenditures for Telephone Service* at Tables 1.8, 1.13, 1.17 (June 1999) (average monthly charges for flat-rate service to businesses with a single line, a key system line, or a PBX trunk in urban areas); FCC, *Statistics of the Long Distance Telecommunications Industry* at Table 12 (Jan. 2001) (national average per-minute access charge paid by long distance carriers in January and July 2000 was 2.9 cents and 1.9 cents, respectively).

Although special access service is distinct from basic local exchange service, it is largely interchangeable with private line service. Both the Commission's own local competition surveys and the leading independent study of the CLEC industry treat special access and local private line service as a single category.[17] A recent survey of local competition by the CLECs' own trade association, ALTS, has likewise endorsed this approach.[18] Moreover, as the Commission has found, both special access and private line services are "specialized services" that "are provided to business customers" that wish to haul large volumes of traffic between two fixed points.[19] CLECs, like ILECs, also use the same facilities to provide private line and special access service.[20]

B. Special Access Competition.

The latest data submitted to the Commission regarding competition for special access services are now more than a year old.[21] Since that time, special access competition has continued to grow rapidly. *See* Table 3.

In the past year, the number of carriers reporting to the Commission that they provide competitive access service has grown from 109 to 349.[22] The number of route miles of fiber that these carriers have deployed has grown from approximately 160,000 to more than 218,000.[23] The revenues competitors have earned from special access service has grown from nearly $5.7 billion (52 percent of what BellSouth, Qwest, SBC, and Verizon were earning) to more than $7.3 billion (57 percent of what BellSouth, Qwest, SBC, and Verizon were earning). CLECs' share of the entire special access/private line market has grown from 33 percent[24] to 36 percent.[25]

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[17] *See CLEC Report 2001*, Ch. 7 at 2 (reporting revenues for Special Access and Private Line together); *Federal-State Joint Board on Universal Service*, Order, CC Docket No. 96-45, DA 00-2729 at fn.18 (rel. Dec. 8, 2000) ("The 1999 Data Request defined 'special lines' to include state private lines as well as interstate special access lines.").

[18] ALTS, *The State of Competition in the U.S. Local Telecommunications Marketplace*, at Graphic I (Feb. 2000); ALTS, *The State of Local Competition 2001*, at 26 (Feb. 2001).

[19] *See Applications of Ameritech Corp., Transferor, and SBC Communications Inc., Transferee, for Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Sections 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95 and 101 of the Commission's Rules*, Memorandum Opinion and Order, 14 FCC Rcd 14,712, ¶ 25 (1999).

[20] *See, e.g.*, D.M. Goldsmith, Buckingham Research Group, Inc., Investext Report No. 2430215, Time Warner Telecom – Company Report at *3 (Jan. 10, 2001) (Time Warner's "Dedicated Transport" provides "direct services either between two telephone companies (IXC and/or LEC), a telephone company and a customer or between private lines.").

[21] *See, e.g.*, P. Huber and E. Leo, *Special Access Fact Report*, Submitted by the United States Telecom Association, Prepared for Bell Atlantic, BellSouth, GTE, SBC, and U S WEST, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98 (FCC filed Jan. 19, 2000) ("*Special Access Fact Report*").

[22] FCC, *Telecommunications Industry Revenue: TRS Fund Worksheet Data*, at Figure 2 (Nov. 1997)); FCC, *Carrier Locator Interstate Service Providers* at Table 1 (rel. Oct. 2000).

[23] *CLEC Report 2001*, Ch. 6 at Table 4.

[24] New Paradigm Resources Group, Inc., *CLEC Report 2000*, Ch. 6 at Table 16 (11th ed. 2000) ("*CLEC Report 2000*"); FCC, *Telecommunications Industry Revenue: 1998*, at Tables 5 & 6; FCC, *Statistics of Communications*

Table 3. Increase in Special Access/Private Line Competition: 1999 vs. 2000			
	1999*	**2000****	**Percentage Increase**
CLECs providing special access/private line services	109	349	220%
CLEC fiber miles	161,617	218,445	35%
CLEC special access/private line revenues	$5.7 billion	$7.4 billion	30%
CLEC special access/private line market share	33%	36%	10%
*Represents network and revenue data as reported in the *Special Access Fact Report*. New Paradigm Resources Group later reported revised data: 191,872 lines and $6.1 billion in CLEC dedicated access/private line revenues as of year-end 1999. **Revenue and network data as of the end of third quarter 2000.			

The D.C. Circuit has now upheld the Commission's "market-based" framework for measuring special access competition.[26] This framework measures the fraction of ILEC wire centers in an MSA in which competitors have obtained fiber-based collocation.[27] The D.C. Circuit agreed with the Commission that collocation "'is a reliable indication of sunk investment by competitors.'"[28] It found that "collocation can reasonably serve as a measure of competition in a given market and predictor of competitive constraints upon future LEC behavior."[29] The court also agreed that analyzing competition at the MSA level was appropriate because MSAs "'best reflect the scope of competitive entry.'"[30]

Applying this framework, it is clear that special access competition is widespread. Today, in 183 of the 320 MSAs in the United States served by BellSouth, Qwest, SBC, and Verizon, one or more fiber-based collocation arrangements existed in wire centers that cover at least 30 percent of the incumbent LECs' special access revenues in those MSAs. These MSAs include 42 of the nation's 50 largest,[31] and generate approximately 80 percent of all BOC/GTE special access revenue.[32] *See* Table 4.

In 154 of the MSAs served by BellSouth, Qwest, SBC, and Verizon, one or more collocation arrangements exist in wire centers that cover at least 65 percent of the incumbent

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Common Carriers at Table 2.9 (1999 ed. 2000)). The ILEC figure ($11.6 billion) was estimated using a 25.8% growth rate, the same rate of growth as the previous year. *Compare id. with* FCC, *Statistics of Communications Common Carriers* at Table 2.9 (1998 ed. 1998).

[25] *CLEC Report 2001*, Ch. 7 at Table 17; FCC, *Statistics of Communications Common Carriers* at Table 2.9 (1999 ed. 2000); FCC, *Telecommunications Industry Revenue* at Tables 5 & 6 (Sept. 2000). The ILEC figure ($12.9 billion) was estimated using a 21.7% growth rate, the same rate of growth as the previous year. *Compare id. with* FCC, *Statistics of Communications Common Carriers* at Table 2.9 (1999 ed. 2000).

[26] *See WorldCom v. FCC*, 238 F.3d. 449 (D.C. Cir. 2001).

[27] Fiber-based collocations are those where "at least one competitor relies on transport facilities provided by a transport provider other than the incumbent." *Pricing Flexibility Order*, ¶ 82.

[28] *WorldCom v. FCC*, 238 F.3d at 457, 459 (quoting *Pricing Flexibility Order* ¶ 81).

[29] *Id.*, 238 F.3d at 459.

[30] *Id.*, 238 F.3d at 461 (quoting *Pricing Flexibility Order* ¶ 72).

[31] *See* Rand McNally, *1999 Commercial Atlas and Marketing Guide*, at 60 (130th ed. 1999).

[32] In calculating the revenue percentages in tables 4-5, the denominator used is the special access revenue in each carrier's own wire centers within an MSA.

LEC's special access revenues in those MSAs. *See* Table 5. These MSAs include 33 of the nation's 50 largest, and generate approximately 64 percent of all BOC/GTE special access revenue. *See* Table 5.

Table 4. MSAs With 1 or More Fiber-Based Collocator Covering *30 Percent* or More of Special Access Revenues in MSA

	Total #	# in top 50 U.S.	# in top 20 in-region	% of region-wide special access revenue*
BellSouth	37	7	20	85.3%
Qwest	37	6	19	71.5%
SBC**	63	18	17	76.5%
Verizon East	46	11	19	86.6%
Total	**183**	**42**	**75**	**80.0%**

*Includes both intrastate and interstate special access revenues. Counts only each company's wire centers within an MSA.
**Does not include Nevada Bell.

Table 5. MSAs With 1 or More Fiber-Based Collocator Covering *65 Percent* or More of Special Access Revenues in MSA

	Total #	# in top 50 U.S.	# in top 20 in-region	% of region-wide special access revenue*
BellSouth	37	7	20	85.3%
Qwest	36	6	18	70.3%
SBC**	44	13	12	55.1%
Verizon East	37	7	14	62.4%
Total	**154**	**33**	**64**	**64.1%**

*Includes both intrastate and interstate special access revenues. Counts only each company's wire centers within an MSA.
**Does not include Nevada Bell.

As the Commission and the D.C. Circuit have recognized, this framework for measuring special access competition is highly conservative because "'it fails to account for the presence of competitors that . . . have wholly bypassed incumbent LEC facilities.'"[33] There is no way to measure precisely where such bypass occurs. Competitive carriers are not subject to any reporting obligations that would reveal this, nor are there any public sources that compile such data. Moreover, because bypass traffic does not, by definition, pass through incumbent LEC networks, the incumbent LECs have no way to measure where such bypass occurs or its extent.

There is nevertheless considerable evidence to suggest that the amount of full bypass continues to increase. *First*, as described in detail below, the amount of local fiber route miles has increased significantly, as has the number of buildings served by this fiber. Similarly, the fixed wireless networks of CLECs that provide special access service have increased considerably in the past year.

[33] *WorldCom v. FCC*, 238 F.3d. at 461 (quoting *Pricing Flexibility Order* ¶ 95). This framework also is conservative because it examines only fiber-based collocation, even though competitive carriers have obtained thousands of collocation arrangements that, although not fiber based today, could easily be modified to connect to third-party fiber.

Second, there has been an enormous rise in alternative collocation providers (so-called collocation "hotels"), which greatly facilitate bypass by giving multiple competitive local carriers and interexchange carriers points at which to interconnect their networks. These companies provide "high-security facilities operated by independent companies that put telecom gear as close as possible to incumbent central offices without actually being there."[34] They permit CLECs to "easily connect with, and hand off traffic to, the IXCs and each other."[35] They allow "[m]ost new business telecom providers . . . to bypass the traditional infrastructure."[36] Today, there are alternative collocation providers in each of the top 50 MSAs, and there are two or more such providers in all but one of the top 50 MSAs. *See* Appendix A.

[34] D. Culver, *Construction Boom for Colocation*, Interactive Week (Mar. 13, 2000), http://www.zdnet.com/intweek/stories/news/0,4164,2468788,00.html.

[35] A. Lindstrom, *Checking Out Carrier Hotels*, America's Network (Nov. 1, 1997).

[36] V. McCarthy, *Local Carriers Take Over Office Buildings*, Interactive Week (May 22, 2000), http://www.zdnet.com/intweek/stories/news/0,4164,2574580,00.html.

II. HIGH-CAPACITY LOOPS AND INTEROFFICE TRANSPORT.

Incumbent LECs typically provide special access and private line services using a combination of high-capacity loops and interoffice transport. The loop is used to haul traffic from an end user's premises to an end office. In the case of special access service, the interoffice transport is used to carry the traffic from the end office to the serving wire center of the end user's interexchange carrier's point-of-presence ("POP"). In the case of private line service, the interoffice transport is used to connect to a second end office, where a second high-capacity loop is used to make the connection to a second customer premises location.

The last set of comprehensive data that the Commission reviewed with respect to competition for the high-capacity loops and interoffice transport that ILECs provide is approximately two years old.[37] Since that time, there has been a dramatic increase in the availability of competitive alternatives to these ILEC facilities. While CLECs have significantly expanded their own local fiber networks, there also has been dramatic increase in local fiber supplied by "carrier-agnostic" wholesale suppliers. These companies have invested well over $1 billion in deploying local fiber networks that they sell or lease to other carriers. These networks connect end user premises to interexchange carrier POPs and ILEC central offices. These alternative wholesale suppliers already operate or are in the process of deploying networks in virtually every part of the country. As a result, for a growing number of CLECs, the fiber provided by these wholesale suppliers satisfies a large part of their demand for last-mile local connectivity and interoffice transport.

In addition to the fiber supplied by CLECs and alternative wholesale suppliers, several of the nation's largest operators of long-haul fiber networks have recently constructed local fiber networks and have begun leasing dark fiber on these networks to CLECs. Fixed wireless providers also have greatly increased the availability of their networks.

A. Fiber-Based Alternatives to ILECs' High-Capacity Loops and Interoffice Transport.

Local competitors provide special access and private line services using a very different network configuration from incumbent LECs. Rather than connect every end user to a central office, CLECs and other local fiber suppliers typically provide a direct fiber connection between a customer's premises (usually an office building) and a metropolitan fiber ring, which generally encircles the central business district of the relevant market.[38] This fiber ring invariably connects to one or more interexchange carrier POPs.[39] A customer that is connected to this network can

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[37] The *UNE Remand Order*, which was released in November 1999, relied on comments received in May and June 1999, and much of the data reported in these comments was current as of end of year 1998.

[38] *See, e.g.*, KMC Telecom Holdings, 10-K at 3 (SEC filed Mar. 30, 2000) ("In all of [KMC's] operational markets," its networks connect "the market's central business district."); XO Communications, 10-Q (SEC filed Sept. 30, 2000) ("[our] broadband fiber optic networks [are] generally focused on the central business districts of the cities we serve.").

[39] *See, e.g.*, E.Spire Communications, Inc., 1999 10-K (SEC filed Apr. 14, 2000) ("The Company's dedicated services provide high capacity non-switched interconnections: (i) between Points of Presence ('POPs') of the same Inter Exchange Carriers ('IXC'); (ii) between POPs of different IXCs; (iii) between large business and government end-users and their selected IXCs; (iv) between an IXC POP and an Incumbent Local Exchange Carrier ('ILEC')

accordingly obtain a dedicated connection to a POP without traversing ILEC facilities of any kind. A customer may also obtain a dedicated connection to another location served by the competitive fiber network. As the Commission has recognized, a competitive local fiber network therefore substitutes directly for both the high capacity loops and the interoffice transport that ILECs provide, and for the special access and private line services that ILECs provide with these facilities.[40]

The Commission has likewise recognized that competitive fiber networks often provide connections between ILEC central offices. For example, it has noted that "competitive LECs have deployed interoffice transport facilities along selected point-to-point routes, primarily in dense market areas."[41] Indeed, CLECs frequently advertise that their fiber networks provide connections between ILEC central offices. For example, KMC notes that, "[i]n all of our operational markets, we have completed our backbone construction connecting the market's central business district with outlying office parks, large institutions, the locations of long distance carriers' transmission equipment and major incumbent local exchange carrier central offices."[42] Adelphia claims that "[t]he broad deployment of fiber optic cable in Adelphia Business Solutions' markets typically enables connectivity among the Company, the incumbent local exchange carrier ("LEC") central offices and the Company's customers."[43] Network Plus's fiber provides connections for the company's "co-location footprint."[44]

1. CLEC Fiber.

The most extensive competitive local fiber networks are owned and operated by CLECs. CLEC fiber networks have grown significantly in the past two years and now offer service to a large portion of business customers. At the time of the *UNE Remand* proceedings, for example, CLEC fiber networks spanned approximately 160,000 route miles.[45] As of third quarter 2000, these networks had grown to more than 218,000 route miles, an increase of more than 36 percent.[46]

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central office or between two ILEC central offices; and (v) between different locations of business or government end-users."); Time Warner Telecom, *National Network*, http://www.twtelecom.com/raleigh.html ("We are co-located with the Interexchange Carriers listed below. In addition to the carriers listed, others may be available . . . AT&T, Broadwing, Cable & Wireless, DukeNet, Global Crossing, Intermedia, Interpath, MCI/Worldcom, Qwest, Sprint and Williams.").

[40] *See Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, Third Report and Order and Fourth Further Notice of Proposed Rulemaking, 15 FCC Rcd 3696, ¶¶ 334-352 (1999) ("*UNE Remand Order*") (analyzing fiber alternatives in context of interoffice transport); *id.* ¶¶ 184-186 (analyzing fiber alternatives in context of high-capacity loops).

[41] *UNE Remand Order* ¶ 333.

[42] KMC Telecom Holdings Inc., 10-K (SEC filed Mar. 30, 2000).

[43] Adelphia Business Solutions, 10-K at 7 (SEC filed Mar. 30, 2000).

[44] Network Plus, 10-K at 13, (SEC filed Mar. 30, 2000).

[45] *See CLEC Report 2001*, Ch. 6 at Table 5 (1999 route miles).

[46] *CLEC Report 2001*, Ch. 6 at Table 5.

As shown in Appendix B, since the time of the *UNE Remand* proceedings, the number of CLEC fiber networks in the 150 largest MSAs – which contain nearly 70 percent of the U.S. population[47] and more than 80 percent of all special access revenue – has grown from 486 to 635. This growth has not been confined to the largest urban areas, but has occurred throughout the country. During this period, the average number of CLEC fiber networks in the top 10 MSAs grew from 9 to nearly 14; in MSAs 11 through 25 from 4.5 to 6.7; in MSAs 26 through 50 from 4.5 to 5.6; in MSAs 51 through 100 from 2.6 to 3.1; and in MSAs 100 through 150 from 1.8 to 2.0. All but 14 of the top 150 MSAs are served by one or more CLEC fiber networks; 77 of the top 100 are served by at least 3 CLEC networks; 47 are served by at least 5 CLECs; and 27 are served by at least 7 CLECs.

There is no authoritative measure of the number of business customers that CLEC customers already reach with their fiber networks. According to the leading independent study of the CLEC industry – New Paradigm Resources Group's *CLEC Report 2001* – CLECs serve approximately 1.15 million buildings.[48] But this figure appears to include approximately 973,000 multi-unit residential apartment buildings,[49] leaving approximately 175,000 commercial office buildings served by CLEC fiber. This figure represents approximately 25 percent of the commercial office buildings nationwide.[50]

This figure is conservative in several respects, however. *First*, the *CLEC Report 2001* reports buildings served for only 28 CLECs, despite the fact that it reports fiber route miles for 58 CLECs.[51] *Second*, this figure does not include the thousands of buildings served by wholesale fiber suppliers other than CLECs, and to which CLECs have access. *Third*, CLECs undoubtedly design their fiber networks to pass by the largest commercial office buildings, which contain the

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[47] Rand McNally, *Commercial Atlas and Marketing Guide 2001* at 83 (132nd ed. 2000).

[48] *CLEC Report 2001*, Ch. 6 at Table 11. ALTS, the CLEC trade association, cites repeatedly to this source for its statistics about the CLEC industry. *See* ALTS, *The State of Local Competition 2001* at 9 (listing among "CLEC Industry Metrics" "Buildings Served: 1,146,882").

[49] RCN, which focuses on serving residential customers, serves 843,000 buildings; Knology, which serves residential and business customers, serves 143,000 buildings. *CLEC Report 2001*, Ch. 6 at Table 11.

[50] U.S. Dep't of Commerce, *Statistical Abstract of the United States 2000*, at Table 1227 (705,000 office buildings nationwide). The Department of Commerce reports the same number of office buildings in 2000 as in 1998, and there is no reason to believe this is incorrect. Indeed, the number of office buildings *decreased* between 1992 and 1995. *Compare* U.S. Dep't of Commerce, *Statistical Abstract of the United States 1995* at Table 1242 (115th ed. 1995) (1992 data) *with* U.S. Dep't of Commerce, *Statistical Abstract of the United States 1998* at Table 1229 (118th ed. 1998) (1995 data). What appears to be happening is that more numerous, older, relatively small office buildings are steadily being replaced by fewer, larger buildings. The Department of Commerce also keeps statistics on all "commercial" buildings, as opposed to just "office" buildings, which number approximately four million. But the category of all commercial buildings, as defined by the Department of Commerce, includes any "building with more than 50 percent of its floorspace used for commercial activities. Commercial buildings include, but are not limited to, the following: stores, offices, schools, churches, gymnasiums, libraries, museums, hospitals, clinics, warehouses, and jails." U.S. Dep't of Commerce, *citing* U.S. Energy Information Administration, *Commercial Buildings Energy Consumption Survey, 1995*, http: www.eia.doe.goc/emeu/cbecs.contents.html. CLECs quite clearly do not target most buildings of this type, so it is reasonable to exclude them in measuring CLECs' success (just as it is reasonable to exclude residential and other noncommercial buildings).

[51] *CLEC Report 2001*, Ch. 6 at Tables 4 & 11, Ch. 9.

largest number of potential new customers for the CLEC.[52] Similarly, not all commercial office buildings contain business customers that are large enough to purchase special access service. All this goes to show that the fraction of office buildings served by CLECs likely understates – perhaps vastly – the fraction of business customers to which these CLECs can readily offer service.

Moreover, CLECs routinely offer service to many business customers that are not already served by their fiber networks. If the customer is large enough, the CLEC will extend its network to that customer. For example, WorldCom's "city networks include spurs off of the rings for connectivity to large buildings and office parks."[53] Intermedia will connect its fiber rings to "the main Class-A buildings in a downtown business district."[54] KMC connects its fiber networks in central business districts to "outlying office parks" and "large institutions."[55] Time Warner's fiber networks "typically extends beyond the ring all the way to end-user buildings."[56]

CLEC fiber is by no means limited to dense urban areas, however. CLECs also have deployed fiber far outside of urban areas to reach large business customers in suburban and rural areas. For example, Ekanet, a subsidiary of the Union Pacific railroad, "aims to provide services to underserved, primarily rural, markets west of the Mississippi River," and boasts access to the "36,000 miles of fiber-optic lines and the 1,500 wireless communications transmission towers built in the railroad's right of way."[57] South Dakota Network "is now offering advanced telecommunications services to customers in rural northwest South Dakota through a 600-mile fiber-optic network," which gives "'[c]ustomers in the thinly populated northwestern portion of the state . . . the same access to advanced communications services as do customers in large urban and suburban areas."[58] International Cable & Telephone Inc. is constructing a "a high-capacity fiber-optic network connecting rural Michigan with Michigan's major markets. The network will stretch from Detroit to Petoskey to Chicago including every small community along the way."[59]

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[52] *See, e.g.*, J. Friedland, Robertson Stephens, Investext Rpt. No. 2079485, Advanced Radio Telecom – Company Report at *1 (Feb. 18, 2000) ("[S]mall and medium-sized businesses usually do not generate enough demand to justify connecting fiber to the building.").

[53] E. Strumingher, PaineWebber, Inc., Investext Rpt. 2265259, Worldcom – Company Report at *2 (Aug. 1, 2000).

[54] *Interview with Robert Manning, CFO, Intermedia Communications*, CNBC/Dow Jones (June 25, 1998).

[55] KMC Telecom Holdings, 10-K at 3 (SEC filed Mar. 3, 2000).

[56] J. Atkin, Dain Rauscher Wessels, Investext Rpt. No. 2491585, Time Warner Telecom Inc. – Company Report at *1 (Feb. 28, 2001).

[57] K. Fairbank, *RAIL SWITCH; Union Pacific Develops High-Tech Subsidiary*, Dallas Morning News at 1D (Oct. 18, 2000).

[58] *Fujitsu Equipment Drives New Fiber Network Serving Northwestern South Dakota*, Business Wire (Nov. 6, 2000).

[59] International Cable & Telephone Press Release, *Local Firm to Build Fiber-Optic Internet Network Connecting Rural Michigan to Major Markets* (July 10, 2000), http://www.ictcabletechs.com/press/press710.html.

The economics of deploying CLEC fiber are continuing to improve in many respects.[60] For one thing, there have been significant advances in boosting the capacity of new and existing fiber. According to equipment manufacturers, fiber is doubling its capacity to carry data every 9-10 months.[61] As the FCC has noted, "[t]he technological advances in fiber and electronics have made expansion of transport capacity relatively inexpensive. Once a competitor has infrastructure in place, the marginal cost of adding customers is not significant, and competitors are not likely to lack sufficient capacity for an extended period."[62]

For another thing, there are new technologies on the near horizon that would enable additional fiber to be deployed without digging up city streets, which "could cut the time and cost of fiber installation in half."[63] For example, "CityNet Telecommunications aims to revolutionize the rollout of broadband services in cities by dispatching tiny robots to lay fiber-optic cables in sewer pipes."[64] The company "already has agreements to run the high-speed fiber cables to commercial and apartment buildings in Indianapolis, Albuquerque and Omaha" and is "in talks with 33 other cities."[65] As the general counsel of ALTS, the CLECs' trade association, has noted, "[t]his could be huge."[66]

Finally, CLECs may connect customers to their networks with fixed wireless connections, which can be deployed much more quickly and cheaply than fiber.[67] As the Commission has recently found, "[f]ixed wireless operators can act as strategic partners with wireline CLECs that wish to extend their fiber networks more cheaply to [buildings without fiber access]."[68] As one analyst notes, "[w]ireless providers are able to serve customers located in buildings that are too small or far away from fiber rings to justify the cost of fiber

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[60] Moreover, CLECs may obtain access to ILECs' poles, ducts, and conduits at TELRIC-based rates. For example, in the Verizon region alone, CLECs currently have 13.2 million feet of fiber occupying leased conduit. This of course does not capture the fiber that CLECs are laying along railroad and other utility rights of ways that do not pass an ILEC premises.

[61] *Industry Buzz*, Forbes (Jan. 8, 2001), http://www.forbes.com/forbes/2001/0108/154s01.html (Lucent states that "fiber-optic cable capacity will double in the first nine months of [2001]"); L. Walker, *A Revolution By Fiber Optimists*, Washtech.com (Oct. 13, 2000) (quoting Dan Schaeffer, Cogent Communications: "Fiber is doubling its capacity to carry data every 10 months.").

[62] Brief of FCC, Respondent, at 36, *MCI WorldCom v. FCC*, No. 99-1395 et al. (D.C. Cir. filed Nov. 30, 2000).

[63] P. Davidson, *Robots Lay Fiber Optics in City Sewers*, USA Today (Nov. 27, 2000).

[64] *Id.*

[65] *Id.*

[66] *Id.* (quoting Jonathan Askin, ALTS).

[67] W. Schaff, *Taking Stock: No Strings Attached*, Information Week (Feb. 22, 1999) ("Nextlink . . . has been concentrating on building fiber-optic connections to large offices and business parks. . . . Nextlink, however, intends to use the wireless system as a way to get to market faster. Once it has established service to a given location, it will build a fiber-optic connection to that location and relocate the radio equipment to another building.").

[68] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993, Annual Report and Analysis of Competitive Market Conditions with Respect to Commercial Mobile Services*, Fifth Report, 15 FCC Rcd 17660, 17786 (2000).

deployment."[69] XO Communications "establishes a wireless link to buildings first and later builds fiber to the buildings after the company has reached its desired customer penetration rate to justify building."[70] Many of the largest CLECs – including AT&T and WorldCom – already have obtained wireless facilities (including licenses) to extend their fiber networks.[71]

2. Wholesale Suppliers of Local Fiber.

CLECs are by no means the only suppliers of metropolitan fiber that provide high-capacity local access and interoffice transport. In the past few years, there has been a dramatic increase in fiber supplied by alternative wholesale suppliers, which typically sell or lease dark fiber to other carriers, but do not themselves engage in the provision of telecommunications services. *See* Table 6.[72] Five of these alternative fiber suppliers recently formed an industry coalition – the Coalition of Competitive Fiber Providers – which states that their members' business plans involve the "provision of competitive fiber-based transport services and dark fiber to competitive local exchange carriers ("CLECs") collocated in ILEC central offices."[73] The Coalition claims that its "members together represent a total capital investment of approximately $1 billion."[74]

Just like CLECs, alternative wholesale suppliers of fiber connect end users to their fiber rings, which in turn connect to interexchange carrier POPs and ILEC central offices. As the CEO of one such company explains, "[w]e're offering an alternative to the local telephone company for the access transport portion of the network, and we'll haul their traffic back to any of their POPs [points-of-presence] or we'll hand it off to an Internet POP or some kind of

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[69] E.G. Henderson, FITCH, IBA, Investext Rpt. No. 2007342, WinStar Communications – Company Report at *3 (Dec. 5, 2000).

[70] E.G. Henderson, Duff & Phelps Credit Rating Co., Investext Rpt. No. 2988183, Telecom Services Update – Industry Report at *7 (Nov. 9, 1999).

[71] AT&T holds 38-GHz licenses in over 200 geographic areas, including more than 95 of the largest 100 metropolitan markets. *See* TCG, *The People Behind a Decade of Vision in Local Telecommunications: 1984-1994* (1994); Gail Garfield Schwartz, Vice President, Public Policy and Government Affairs, Teleport Communications Group, Testimony before the House Judiciary Antitrust Enforcement Agencies (Nov. 5, 1997). WorldCom has invested nearly $700 million to obtain fixed wireless connections to complement its local fiber networks. *See MCI Worldcom's Wireless Cable Plans Seen Widening Broadband Options*, Communications Daily (Mar. 31, 1999); *CAI Wireless, MCI Affirm Deal*, AP Online (Apr. 27, 1999).

[72] Jack Grubman, a leading telecom analyst, recently noted that "there is an avalanche of metro capacity being deployed." J. Grubman, Salomon Smith Barney, *Grubman's State of the Union* at 15 (Mar. 21, 2001). Another analyst has noted that "[w]e believe that we have reached the beginning of the end of the metropolitan bandwidth bottleneck . . . We are seeing a new generation of metropolitan bandwidth operators that will provide 100 Mbps plus connectivity at low cost to end users." *Robertson Stephens Provides Outlook on Telecom Services*, PR Newswire (Sept. 7, 2000).

[73] Coalition of Competitive Fiber Providers, Petition for Declaratory Ruling at 2, *Application of Sections 251(b)(4) and 224(f)(1) of the Communications Act of 1934, as amended, to Central Office Facilities of Incumbent Local Exchange Carriers* (FCC filed Mar. 15, 2001) ("*Coalition of Competitive Fiber Providers Petition*"). The five coalition members are American Fiber Systems, Fiber Technologies, Global Metro Networks, Telergy, and Telseon.

[74] *Id.* at 2.

telecom CO [central office]."[75] Another company notes that "[w]e connect carriers, ISPs, POPs, IXCs, collocation hotels, web hosting facilities, ILEC central offices and major commercial buildings in the top 25 cities in the U.S."[76] The Coalition of Competitive Fiber Providers states that its members "provide, or will provide, advanced fiber-based transport services, *including interoffice transport*, and/or dark fiber to end users and other telecommunications carriers. Coalition members offer these services and products *in virtually every region of the 'lower 48' states and the District of Columbia*."[77]

Table 6. Wholesale Local Fiber Suppliers

Company	Cities with Operational and Planned(*) Networks
Metromedia Fiber Networks	Boston, New York City, Philadelphia, Washington, D.C., Atlanta, Miami, Houston, Dallas, St. Louis, Chicago, Cleveland, Detroit, Denver, Phoenix, Los Angeles, San Francisco, Seattle
Fiberworks	Atlanta, Charlotte, Birmingham*, Orlando*, Miami/Ft. Lauderdale*, Greenville*, Nashville*, Dallas/Ft. Worth*, Jacksonville*, Tampa*, New Orleans*, Raleigh/Durham*, Austin*, San Antonio*, Houston*
American Fiber Systems	Hartford, Wilmington, Fort Lauderdale, Orlando, Tampa, Baltimore, Springfield, Worcester, Atlantic City, Newark, Trenton, Albany, Buffalo, Rochester, Syracuse, Charlotte, Raleigh, Harrisburg, Pittsburgh, Providence, Richmond, Norfolk, Birmingham, Mobile, St. Louis, Kansas City, Little Rock, Omaha, Colorado Springs, Indianapolis, Des Moines, Louisville, New Orleans, Baton Rouge, Ann Arbor, Cleveland, Cincinnati, Oklahoma City, Nashville, Austin, San Antonio, Milwaukee, Madison, Minneapolis, Jackson, Phoenix, Sacramento, San Diego, Santa Barbara, Stockton, Honolulu, Boise, Las Vegas, Portland, Salt Lake City, Tacoma
Fiber Technologies	Albany, Syracuse, Rochester, Buffalo, Springfield, Providence, Worcester (all scheduled for completion by the end of 1Q 2001)
Yipes	Santa Clara, Atlanta, Boston, Chicago, Dallas, Denver, Ft. Lauderdale, Houston, Longmont, Miami, Palo Alto, Philadelphia, Pittsburgh, Riverside, San Diego, San Francisco, Seattle, Washington, D.C., Worcester
Telseon	Phoenix, San Diego, San Francisco, Sunnyvale, Palo Alto, Los Angeles, Denver, Miami, Orlando, Tampa, Atlanta, Chicago, Boston, Detroit, St. Louis, Newark, New York City, Cincinatti, Philadelphia, Dallas, Houston, McLean, Reston*, Vienna, Seattle
Looking Glass	Company has approvals to operate as a public utility and to offer facilities-based telecommunications services in California, Colorado, Florida, Indiana, Maryland, Michigan, Minnesota, Missouri, Ohio, Oregon, Virginia and Washington
Telergy	Buffalo, Syracuse, Albany, New York City
Northeast Optic Network	Boston, New York, Philadelphia, Washington, D.C.

Sources: *See* Appendix C.

And like CLECs, these alternative wholesale suppliers of fiber will extend their networks to reach customers. For example, MFN will "bring our fiber right up to our customers' floors in

[75] M. Fuller, *Fiberworks to Deploy Carrier-Agnostic All-Optical Local-Access Network*, Lightwave (Nov. 2000), http://lw.pennnet.com/Articles/Article_Display.cfm?Section=Articles&SubSection=Display&ARTICLE_ID=84033&VERSION_NUM=1 (quoting Fiberworks president and CEO Scott Burkholder).

[76] Looking Glass Networks, *Corporate Data*, http://www.lglass.com/corpdata.htm.

[77] *Coalition of Competitive Fiber Providers Petition* at 1 (emphasis added).

their buildings and provide them with wall-to-wall seamless connectivity."[78] Another wholesale supplier indicates that its network is "available" to all businesses that "pass within 6000 feet."[79] And another "provides the fiber-optic link from its access network directly into the building."[80] NEON, which has agreements with various utilities to use their rights of way, can "provide its customers with fiber optic connectivity to virtually any location in its service territory" using a process that is "quick and efficient."[81]

Because these alternative suppliers are "carrier agnostic," they can use their networks to serve multiple carriers at once, significantly improving the economics of deploying fiber. As the CEO of one supplier notes, "it makes sense for carriers to share [their] network, because [they] have so much bandwidth to work with and have the potential for so much additional bandwidth."[82] NEON's business plan "is lower risk than most of the emerging nationwide network builders" because it "plans to only operate as a carrier's carrier, which takes away the risk of competing with other carriers for end-user services and significantly decreases operating expenses."[83]

For a growing number of CLECs, the fiber provided by these wholesale suppliers satisfies a large part of their demand for last-mile local connectivity and interoffice transport. For example, Allegiance has leased fiber from suppliers in 19 markets, and claims that "[t]hese fiber rings are expected to provide Allegiance with a reliable diverse connection *to most of its central office collocations throughout a market*."[84] CTC recently purchased from a "number of dark fiber suppliers" "local fiber in selected geographical areas of eastern Massachusetts, southern New Hampshire, southern Maine and Rhode Island," which it claims will "extend CTC's existing high bandwidth fiber network backbone to Verizon local switching offices," and

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[78] A. Lindstrom, *Fiber: Part II*, America's Network (Sept. 1, 1998).

[79] *Fiberworks to Light Up Atlanta and Alleviate Atlanta's Bandwidth Bottleneck*, Business Wire (Aug. 22, 2000).

[80] *Id.*

[81] F.J. Governali, et al., Credit Suisse First Boston Corp., Investext Rpt. No. 2699472, Northeast Optic Network – Company Report at *4 (Sept. 10, 1998) ("Because of the geographic flexibility and virtual ubiquity of NEON's electric utility rights-of-way, the company can provide fiber optic connectivity for its carrier customers to and from virtually any location in the NEON service territory, including intercity long-haul or short-haul facilities, intracity local loop facilities, or a combination of both. . . . In order to exercise its access privileges to reach end-user locations (for carrier customers), NEON simply needs to apply to the respective utility. The process of access is quick and efficient, as is already demonstrated in NEON's operations. The construction cost to the end-user location would be absorbed by the carrier customer.").

[82] *Id.*; *see also* W.T. Scott, et al., ING Baring Furman Selz LLC, Investext Rpt. No. 2762074, Telecommunications Services – Industry Report at *12 (Sept. 29, 1998) (quoting Howard Janzen, President and CEO, Williams Communications: "The reason we're not focused on that local business is that our large wholesale customers are in that business and we don't chose [sic] to compete with our customers. We are trying to work with them to make them successful, so we don't want to compete against RBOCs and CLECs, trying to play in their game. We want to bring them the capacity they need to make their local strategies work.").

[83] F.J. Governali, et al., Credit Suisse First Boston Corp., Investext Rpt. No. 2699472, Northeast Optic Network – Company Report at *3 (Sept. 10, 1998).

[84] Allegiance Telecom Inc., 10-K405 (SEC filed Mar. 29, 2000) (emphasis added).

enable it to "eliminate the need for leased inter-office Verizon facilities."[85] In fact, these alternative suppliers' networks are so expansive that even ILECs have begun purchasing fiber from them.[86]

MFN. The largest wholesale supplier of fiber is Metromedia Fiber Networks (MFN), which has a "focus on massive fiber deployment, particularly at the local level."[87] At the beginning of 1999, MFN's intracity networks "consisted of approximately 160,000 fiber miles, covering approximately 400 route miles in four major metropolitan areas (New York, Philadelphia, Washington, D.C., and Chicago)."[88] By March, 2000, MFN's "existing intra-city networks" grew to "approximately 514,000 fiber miles covering in excess of 1,000 route miles in" eleven of the largest U.S. cities."[89] MFN is in the process of expanding its networks in these high population areas, and building networks in smaller metropolitan centers as well.[90] MFN has already signed agreements to provide local dark fiber with at least seven CLECs: ITC-DeltaCom, Dominion Telecom, Adelphia, Allegiance, Time Warner, Intermedia, and WinStar.

Fiberworks. Fiberworks is a "carrier's carrier" that provides "citywide all-fiber, all-optical infrastructures over which carriers and service providers offer their next generation voice and data services."[91] The company plans to "offer the most extensive all-fiber, all-optical 'last mile' metropolitan local access network in the United States,"[92] which are "aimed at replacing the existing 'last mile' copper infrastructure with fiber." When completed, its "'last mile' fiber network will consist of 388 route miles that will pass within 6000 feet of 1,938 buildings making broadband service available to 19,380 businesses and 585,000 employees."[93] Fiberworks already has networks operational in two cities, and plans to be operational in an additional 13 metropolitan areas.[94] The company has a "carrier-agnostic wholesale business model," with a

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[85] *CTC Communications Announces Fully Funded Local Fiber Build-Out Plan; High Bandwidth Core Fiber Network to Be Extended to Verizon Local Switching Offices*, Business Wire (Dec. 19, 2000).

[86] *See, e.g.*, B. Wallace, *Bell Atlantic Eyes Further Expansion*, TechWeb (Oct. 18, 1999), http://www.informationweek.com/757/atlantic.htm (Bell Atlantic invested $550 million to gain access to MFN's local fiber networks in 50 cities); D. Rohde, *Looking for SBC Over the Horizon*, Network World Fusion (Aug. 21, 2000), http://www.nwfusion.com/columnists/2000/0821rohde.html?nf (SBC will buy local dark fiber nationwide from MFN).

[87] *Metromedia Fiber Network Changes the Playing Field For CLECs and RBOCs – Supplier or Competitor?*, Business Wire (Feb. 14, 2000).

[88] Metromedia Fiber Network, 1998 10-K405 (SEC filed Mar. 17, 1999).

[89] Metromedia Fiber Network, 1999 10-K405 (SEC filed Mar. 17, 2000).

[90] "We are currently working to expand our existing local intra-city networks in these metropolitan areas, and to construct additional intra-city networks in approximately 40 additional Tier I and Tier II markets in the United States." Metromedia Fiber Network, 1999 10-K405 (SEC filed Mar. 17, 2000).

[91] Fiberworks, *Metro Access: Lighting the Last Mile*, http: www.fiberworks.com/ProductsandServices/MetroAccess/.

[92] *Fiberworks to Light Up Atlanta and Alleviate Atlanta's Bandwidth Bottleneck*, Business Wire (Aug. 22, 2000).

[93] *Id.*

[94] Fiberworks Press Release, *Fiberworks Obtains Authority to Construct Carrier-Neutral Metro Access™ Network in Georgia* (Oct. 23, 2000).

customer base that "encompasses ASPs/ISPs, IXCs, CLECs, and in-building LECs." This will "revolutionize the rates charged currently to businesses by the telecommunication industry's incumbent local exchange carriers (ILECs)."[95]

American Fiber Systems (AFS). AFS designs and deploys "high-capacity, dark fiber-optic networks in the metropolitan areas of second- and third-tier American cities (metro populations of 300,000 to 3 million)."[96] The company's networks "unite the switching facilities of local telephone companies, Internet companies, utilities, and long distance companies in a powerful fiber-optic ring, providing high-capacity broadband capacity for a wide range of communications companies."[97] AFS offers communications companies the option to "lease a dark-fiber optic network solution from American Fiber Systems, eliminating the frustration of dealing with ILECs and the expense of building your own network."[98] AFS is in the process of installing dark fiber optic rings in 131 cities in 41 states across the country. It claims that "[t]hese networks are essential in removing the bottleneck currently caused in these cities by antiquated metropolitan networks."[99] AFS plans to install "more than 1.4 million miles of fiber-optic strands in mid-sized second and third-tier U.S. cities in the next five to seven years."[100]

Fiber Technologies. Fiber Technologies "designs, builds and leases high performance, state-of-the-art fiber networks . . . throughout the Northeast, Mid-Atlantic and Midwest regions."[101] It offers "principally 'dark' or unlit fiber," to "the new competitive telecom carriers such as CLEC's, DSL providers, wireless carriers, ISP's and ICP's."[102] Over the "next four years," Fiber Technologies plans to "build over 40 local metro networks," which "will total over 6400 route miles, with over 306,000 fiber miles."[103]

Yipes. Over the past 18 months, Yipes has assembled fiber networks in 20 major U.S. markets after receiving over $230 million in funding.[104] It has done so largely "by purchasing dark fiber. . . unused capacity laid in the ground by telecommunication companies, utilities, cities and others," thereby establishing "a large footprint without the delays and expense associated

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[95] *Fiberworks to Light Up Atlanta and Alleviate Atlanta's Bandwidth Bottleneck,* Business Wire (Aug. 22, 2000).

[96] American Fiber Systems, *About AFS,* http://www.americanfibersystems.com/about.html.

[97] American Fiber Systems Press Release, *Dark Fiber Startup American Fiber Systems Secures Investment from Lucent Venture Partners.*

[98] American Fiber Systems, *About AFS,* http://www.americanfibersystems.com/about.html.

[99] American Fiber Systems Press Release, *Dark Fiber Startup American Fiber Systems Secures Investment from Lucent Venture Partners.*

[100] American Fiber Systems Press Release, *Fiber-Optic Network Executive Predicts Dramatic Changes in Telecom Landscape; American Fiber Systems Solves the Bandwidth Shortage in Mid-Sized U.S. Cities.*

[101] Fiber Technologies, *Company,* http://www.fibertechnologies.net/company/index.htm.

[102] *Id.*

[103] *Id.*

[104] *Yipes,* Silicon Valley Daily (Nov. 28, 2000), http://svdaily.com/yipes.html; Yipes Press Release, *Yipes Opens 20th Market in Rapid National Build-Out of Optical IP Networks* (Dec. 11, 2000).

with digging trenches and burying glass in the ground."[105] Yipes's "networks, constructed on leased lines, are built for data, making high-bandwidth connections a relative snap to install, with no new equipment necessary."[106]

Telseon. Another new local dark fiber supplier, Telseon, also has assembled fiber networks in 20 markets, which it resells to service providers.[107] Like Yipes, Telseon has assembled this network by purchasing dark fiber from other wholesale suppliers (like Level 3 and MFN)[108] and "from municipalities, utilities and private companies."[109]

Looking Glass. Looking Glass Networks is currently building fiber networks "to become the premier provider of high bandwidth, low cost data transport services for carriers and enterprise customers" in the top 25 U.S. markets.[110] In March 2001 Looking Glass secured $275 million in debt financing, following the $200 million in equity raised in April 2000.[111] Looking Glass has received approval to offer facilities-based telecommunication services in 19 states, and is "directly on track for service roll-out to customers by the second half of 2001."[112] Fiber rollout will begin in Chicago; networks in the top 10 metropolitan markets will be complete in 2001, followed by an additional 10-15 cities in the next two to three years.[113]

Telergy. Founded and headquartered in Syracuse, New York, Telergy in 1995 "began deploying advanced high-speed fiber-optic networks along utility rights-of-way with the purpose of bundling advanced telecommunications and energy services."[114] Telergy's fiber network

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[105] D. Levine, *Yipes! Firm Uses Ethernet to Compete with Big Telcos*, S.F. Business Times (Sept. 22, 2000).

[106] *Dealflow: Yipes! They Did It Again!*, Redherring.com (Oct. 10, 2000), http://www.redherring.com/vc/2000/1010/vc-ltr-dealflow101000.html.

[107] Telseon, *Telseon Service Availability*, http://www.telseon.com/frames.asp. *See also* Telseon, *Customers*, http://www.telseon.com/frames.asp (customers include: AltaVista, Chapter 2, Dyna Link Telecom Inc., eGreetings, Enron, Engage, Garage.com, iAsiaWorks, Incyte Genomics, InterNAP, NonStopNet, Riverstone, and StorageLink (SANSIA)). The company is private and does not release revenue figures, but its private funding totals $261 million. *Telseon Scores $175M in Funding*, LightReading.com (Feb. 6, 2001), http://www.lightreading.com/document.asp?doc_id=3550.

[108] Telseon has a $43 million network services agreement with Level 3 for dark fiber, collocation and other services. Telseon Press Release, *Telseon Announces $43 Million Network Services Agreement with Level 3 Communications* (May 1, 2000). *See also* Telseon Press Release, *Metromedia Fiber Network to Provide Fiber-Optic Infrastructure to Telseon in Key U.S. Cities* (Aug. 30, 2000).

[109] D. Piscitello, *EtherLECs – Competitors or Saviors?*, CLEC-Planet (Jan. 11, 2001).

[110] Looking Glass Networks, *Home*, http://www.lglass.net/index2.htm; Looking Glass Press Release, *Looking Glass Networks Receives Regulatory Approvals to Enter Four Additional Major Metropolitan Markets* (Aug. 28, 2000).

[111] G. Ruderman, *Looking Glass Networks Nets Huge Debt Financing Round*, i-street.com (Mar. 2, 2001).

[112] Looking Glass Networks Press Release, *Looking Glass Networks to Deploy Corning® MetroCor™ Fiber in Key U.S. Cities* (Nov. 16, 2000).

[113] *Id.*; G. Ruderman, *Looking Glass Networks Nets Huge Debt Financing Round*, i-street.com (Mar. 2, 2001); Looking Glass Networks Press Release, *Looking Glass Networks Announces Major Franchise Agreement and Additional Regulatory Approvals* (Feb. 1, 2001).

[114] Telergy Press Release, *Telergy Announces New Dark Fiber and Associated Services* (Jan. 30, 2001).

combines the latest communications technology with the extensive reach provided by utility right-of-ways.[115] Telergy "offers a variety of inter-city and intra-city carrier products throughout the Northeast, including dark fiber, for which Telergy offers an Indefeasible Right to Use (IRU) for dark fiber strands for a term of up to 20 years."[116] Currently, Telergy has intra-city networks in Buffalo, Syracuse, Albany, and New York City.[117]

Northeast Optic Network (NEON). NEON operates "interstate, intercity, and local loop facilities [that] comprise a network of approximately 1,500 route miles and more than 60,000 fiber miles."[118] It provides "connectivity to more than 100 Points of Presence (POPs) and Local Switching Offices (LSOs), with many more to follow."[119] Its facilities serve five tier-one cities and 21 second-tier cities in the Northeast and Mid-Atlantic states. This region is "the nation's busiest telecommunications corridor," a "$50-billion market [that] encompasses 20 percent of the nation's communications market."[120]

Utilities. Utility companies control a significant portion of the nation's fiber infrastructure – as much as 35 percent according to one source.[121] Numerous utility companies have gone into the business of supplying last-mile fiber facilities. These companies have the advantage of being able to deploy fiber using their existing infrastructure. As one analyst notes, "If a company already has wires or pipes in the ground, the cost of entry is comparatively low."[122] Another analyst notes that "roughly half of the new metro networks being built in the United States are being constructed by utilities."[123]

Touch America (formerly Montana Power) operates a fiber network that spanned 18,000 miles by year-end 2000 and is expected to reach 26,000 miles by year-end 2001.[124] Although the network is used for long-haul services, it also is used "for Touch America's own direct connections to individuals and businesses through its wireless services, metropolitan fiber offerings, and private line, long-distance and Internet applications."[125] Progress Telecom operates long-haul fiber networks but is "building local metropolitan fiber networks to try to get

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[115] Telergy, *Network*, http://www.telergy.net/about_us/network/.

[116] Telergy, *Telergy Wholesale Services*, http://www.telergy.net/products/wholesale/.

[117] Telergy, *The Telergy Network*, http://www.telergy.net/about_us/network/.

[118] Northeast Optic Network, *Company Overview*, http://www.neoninc.com/.

[119] *Id.*

[120] *Id.*

[121] J. Krause, *They've Got the Power*, The Standard (Dec. 20, 1999).

[122] I. McDonald, *Butterfly Companies: The Web Has Transformed These Utilities Firms*, The Street.com (Nov. 3, 2000), http://www.thestreet.com/funds/fundjunkie/1155477.html.

[123] K. Maddox, *New Era, New Partner – Old-Line Manufacturer Chooses Cinergy for Network Build*, tele.com (Mar. 5, 2001) (citing Forrester analyst Maribel Dolinov).

[124] *Montana Power to Divest Energy Businesses.Company to Become Touch America*, PR Newswire (Mar. 28, 2000).

[125] *Id.*

the capacity out close to the buildings and the consumers where they need it."[126] Cinergy Communications (a telecom subsidiary of Cincinnati's gas and electric provider, Cinergy Corp.) has begun leasing its fiber network that circles Cincinnati.[127] Reliant Energy Communications (a subsidiary of Reliant Energy) operates a 67-route mile fiber backbone in Houston.[128] El Paso Global Networks (a subsidiary of natural gas and energy company El Paso Corp.) plans to spend $2 billion over the next four years on a nationwide fiberoptic network and "plans to overbuild its metropolitan areas to provide better connectivity."[129] FPL FiberNet (a subsidiary of the utility holding group that includes Florida Power & Light) provides connectivity to major telecom centers in Florida, "including leading carrier hotels, NAP initiatives, international cable-heads and large central offices."[130]

3. Interexchange Carriers that Supply Local Dark Fiber.

Several of nation's largest operators of long-haul fiber networks have recently constructed metropolitan fiber networks. *See* Table 7. These carriers have sold dark fiber on their long-haul networks to CLECs for many years, and have now begun leasing dark fiber on their metropolitan fiber networks as well.

Williams. In February 2000 Williams announced that, "to ride a wave of interest in providing high-speed connections as close to urban business areas and residential neighborhoods as possible," it would "spend $149 million this year to begin construction" in 50 cities by the end of the year."[131] Williams also stated that it would "spend $421 million over three years in order to link its proposed 33,000-mile fiber-optic 'backbone' network directly to business customers in the nation's largest cities."[132] Williams has formed a local access services division specifically "to implement the deployment of the local network and the development of DS3 to OC48 private line and wave services within the targeted major markets."[133]

Level 3. Level 3 has "substantially completed" construction of its network, which includes "multi-conduit, upgradeable local city networks" in 56 U.S. cities.[134] These

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[126] *Progress Telecom Appears on Alexander Haig's World Business Review TV Series; Discusses Telecommunication Solutions for Electric Utility Infrastructure*, Business Wire (Oct. 30, 2000).

[127] K. Maddox, *New Era, New Partner – Old-Line Manufacturer Chooses Cinergy for Network Build*, tele.com (Mar. 5, 2001).

[128] *Reliant Energy Communications Opens Austin Internet Data Center*, PR Newswire (Feb. 26, 2001).

[129] L. LaBarba, *Someone Is Still Spending*, Telephony (Feb 26, 2001).

[130] *FPL FiberNet Announces Lighting of Florida Metros*, PR Newswire (Mar. 7, 2001).

[131] C. Grice, *Williams to Expand High-Speed Network into 50 Cities*, News.com (Feb. 10, 2000), http://news.cnet.com/news/0-1004-200-1546995.html?tag=st.

[132] *Id.*

[133] *Williams Communications Launches Plan to Extend Long-Haul Fiber Network Into Top 50 U.S. Markets, Extending Reach of Carrier Customers*, PR Newswire (Feb. 10, 2000).

[134] Level 3 Communications, 2000 10-K (SEC filed Mar. 8, 2001); Level 3 Communications, *Build-Out Progress*, http://www.level3.com/us/info/network/buildoutprogress.

metropolitan networks consist of "a Gateway site connected to a local-fiber network."[135] They connect "Level 3's intercity network gateway sites to ILEC and CLEC central offices, long distance carrier POPs, buildings housing communication-intensive end users and Internet peering and transit facilities."[136]

Global Crossing. Global Crossing is in the process of "constructing a series of city rings to provide connections on a building-to-building scale."[137] These networks will enable customers to "reduce their costs substantially by co-locating with Global Crossing and bypassing the need for LEC local loops."[138] And they will enable Global Crossing to "establish[] itself as an end-to-end provider by combining its recently launched local loop service with its Integrated T-1."[139] Global Crossing completed metropolitan fiber networks in 10 major U.S. cities in 2000: New York, Philadelphia, Washington D.C., Atlanta, Miami, Dallas, Chicago, San Francisco, San Jose, and Los Angeles.[140]

Qwest. Qwest is building local fiber rings in 25 major metropolitan markets outside of the areas in which it is the incumbent local exchange carrier (*i.e.*, the former U S WEST territory). When these networks are complete by the end of 2001, its "network will consist of more than 375,000 local fiber miles."[141] Qwest has already announced that it has local networks operational in 12 of the 25 cities in which it is building networks.[142]

Table 7. Local Fiber Networks of IXCs that Supply Dark Fiber

Company	Cities with Operational and Planned(*) Networks
Williams	Atlanta, Boston, Chicago, Dallas, Houston, Los Angeles, New York, San Francisco, Washington, D.C., Philadelphia (*construction is planned in 40 more cities by the end of 2001)
Level 3	Atlanta, Baltimore, Boston, Chicago, Cincinnati, Dallas, Denver, Detoit, Houston, Long Island, Los Angeles, Miami, New York, Orlando, Philadelphia, Phoenix, San Diego, San Francisco, San Jose, Seattle, St. Louis, Stamford, Tampa, Washington, D.C.
Global Crossing	New York, Philadelphia, Washington, D.C., Atlanta, Miami, Dallas, Chicago, San Francisco, San Jose, Los Angeles
Qwest	Baltimore, Chicago, Dallas/Ft. Worth, Houston, Kansas City, Los Angeles, New York, Sacramento, San Francisco, San Jose, Washington, D.C.

Sources: See Appendix C.

[135] Level 3 Communications, *Build-Out Progress*, http: www.level3.com/us/info/network/buildoutprogress.

[136] Level 3 Communications, 1999 10-K (SEC filed Feb. 15, 2000).

[137] Global Crossing, *The Expanding Network*, http://www.globalcrossing.com/network.htm.

[138] Global Crossing, *Colocation*, http://www.globalcrossingcarrier.com/ps_colocation.htm.

[139] Global Crossing Press Release, *Global Crossing Offers Carriers Integrated T-1 Service* (Feb. 21, 2000).

[140] Global Crossing Press Release, *Global Crossing Reports 2000 Pro Forma Cash Revenue up 36%, Recurring Adjusted EBITDA Up 54% from 1999* (Feb. 14, 2001).

[141] *Qwest Communications to Provide Direct Fiber Access to Its Global Broadband Internet Network at SC2000*, PR Newswire (Nov. 6, 2000).

[142] Qwest Communications Press Release, *Qwest Communications Launches Business-Class DSL Service in Pittsburgh* (Mar. 13, 2001).

B. Additional Fixed Terrestrial Wireless Alternatives for High-Capacity Loops.

After fiber, the second major alternative loop technology used to reach large- and medium-sized business customers is fixed terrestrial wireless connections. The Commission has recognized that fixed wireless access offers "a replacement for the 'last mile' of copper wire."[143] And it has concluded that "fixed wireless technology has developed to the point where it has the potential to provide a competitive alternative to the incumbent LEC network."[144]

Fixed wireless allows "faster time to market advantage over fiber-based networks,"[145] and is relatively inexpensive to deploy.[146] Moreover, fixed wireless costs are not distance sensitive,[147] and almost every business in a license area can be reached as soon as service is activated. Roll out times are very short – "[a]ctivating a system within 90 to 120 days is feasible."[148]

The largest fixed wireless provider is WinStar, which has grown substantially in the past two years. WinStar has begun providing service in 30 new markets in the past two years,

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[143] *Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, Third Report, FCC 98-91, App. F at F-1 (1998) ("*Third CMRS Report*").

[144] *Amendment of the Commission's Rules to Establish Competitive Service Safeguards for Local Exchange Carrier Provision of Commercial Mobile Radio Services*, Report and Order, 12 FCC Rcd 15668, ¶ 54 (1997).

[145] *Third CMRS Report* at App. F, F-12.

[146] *See, e.g.*, WinStar Communications Inc., 1999 10-K (SEC filed Mar. 10, 2000) ("we are able to connect customer buildings at a cost which is substantially less than that incurred in a fiber-build strategy.").

[147] *See International Engineering Consortium*, http://www.webproforum.com/amd/topic01.html.

[148] *Id. See also Third CMRS Report* at App. F at F-1 at n.1 (citing a Deloitte & Touche report stating that wireless networks cost one-third and can be deployed in one-third the time of wireline networks).

bringing its total to 60 markets nationwide.[149] The company now has access rights to 13,000 buildings, up from 4,200 in 1999.[150] According to the company's CEO, "It took us five years to connect our first 1,000 buildings and 18 months to get the next 1,000 . . . Now we've added 1,000 buildings the last two quarters."[151]

[149] WinStar Communications Inc., 1999 10-K405 (SEC filed Mar. 10, 2000); WinStar Communications, Inc., 10-K (SEC filed Mar. 31, 1999).

[150] *Id.*; WinStar Communications Press Release, *WinStar Reports Continued Strong Results* (Nov. 8, 2000).

[151] R. Krause, *With Positive Cash Flow, Will WinStar Start to Shine?*, Investor's Bus. Daily at 6 (Feb. 5, 2001).

Appendix A. Competitive Collocation Providers (Collocation Hotels)	
MSA (in order by population)	**Companies with Operational and Planned (*) Collocation Facilities**
Los Angeles-Long Beach, CA	COLO.com, E-COLO.com (2), ExtraNet*, Gateway Colo, Global NAPs, IX2 Networks, Layerone, Switch & Data, Telehouse America, TelX, The Next Millennium, Tres, Universal Access, Exchange Colocation*
New York, NY	AccessColo, COLO.com, E-COLO.com, ExtraNet, Global NAPs, MetroNexus, Switch & Data, Telehouse America (2), TelX, The Raco Group, Universal Access,
Chicago, IL	COLO.com (2)*, CoreLocation, E-COLO.com, Gateway Colo , Layerone, Switch & Data*, Universal Access, AccessColo*, ExtraNet
Philadelphia, PA-NJ	AccessColo, E-COLO.com, Switch & Data, COLO.com*
Washington, DC-MD-VA-WV	AccessColo, COLO.com, ColoSafe (2), E-COLO.com (4), ExtraNet*, Gateway Colo*, Global NAPs, Switch & Data, Universal Access
Detroit, MI	ColoVault, E-COLO.com, Layerone*, Switch and Access, COLO.com
Houston, TX	COLO.com*, E-COLO.com, Layerone, MetroNexus
Atlanta, GA	AccessColo*, CoreLocation, E-COLO.com, Gateway Colo*, Global NAPs, MetroNexus, NetSentinel, Node Com, Switch & Data, Tres, Universal Access, COLO.com*
Boston, MA-NH	AccessColo*, COLO.com , E-COLO.com, Gateway Colo*, Layerone*, Switch & Data, Universal Access
Dallas, TX	COLO.com , E-COLO.com (2), Gateway Colo*, Layerone, Switch & Data, TeleTeam, Teraspace, Tres, Universal Access
Phoenix-Mesa, AZ	COLO.COM, E-COLO.com, Layerone*, Switch & Data, ColoVault
Minneapolis-St. Paul, MN-WI	Axon Telecom, ColoVault*, E-COLO.com, Layerone*, Node Com, Switch & Data, COLO.com*
San Diego, CA	Colo.com, E-COLO.com, MetroNexus, Switch & Data
Orange County, CA	E-COLO.com
Nassau-Suffolk, NY	AccessColo
St. Louis, MO-IL	Axon Telecom, COLO.com*, ColoVault*, E-COLO.com, Layerone, Switch & Data (2)
Baltimore, MD	AccessColo*, ColoCo, ColoSafe, E-COLO.com, SkyNetWeb
Pittsburgh, PA	AccessColo*, ColoSolutions, E-COLO.com, Switch & Data, COLO.com
Oakland, CA	COLO.com, E-COLO.com
Seattle-Bellevue-Everett, WA	Apollo Communications, COLO.com, E-COLO.com (2), Tres*, Gateway Colo, MetroNexus, Switch & Data, WCI Lightpoint
Tampa-St. Petersburg-Clearwater, FL	ColoSolutions, AccessColo, E-COLO.com, Layerone, Switch & Data
Cleveland-Lorain-Elyria, OH	AccessColo*, ColoSolutions, E-COLO.com, Switch & Data, COLO.com*
Miami, FL	COLO.com, E-COLO.com, Gateway Colo, Global NAPs, Layerone, Switch & Data, AccessColo*, ExtraNet*, Universal Access
Newark, NJ	E-COLO.com, Gateway Colo, ExtraNet*
Denver, CO	@Lightspeed, E-COLO.com, Gateway Colo, Switch & Data*, Universal Access
Portland-Vancouver, OR-WA	COLO.com*, E-COLO.com, Switch & Data, WCI Lightpoint (2)
San Francisco, CA	COLO.com, E-COLO.com, Exchange Colocation, UPNetworks, Universal Access, Layerone*
Kansas City, MO-KS	Axon Telecom, E-COLO.com, Switch & Data*, COLO.com*
San Jose, CA	Astragate.net, CoreLocation, E-COLO.com (2), Switch & Data, Universal Access